Lead Placement and Acquisition of the 12-Lead Electrocardiogram
Chapter 1 Objectives

• Differentiate bipolar and unipolar limb leads and precordial leads
• Describe the lead placement for a 12-lead electrocardiogram
• Describe the procedure for 12-lead acquisition
• Describe the procedure for multi-lead acquisition using a 3-lead bipolar machine
Electrodes – Limb Leads

- RA – Right arm
- LA – Left arm
- LL – Left leg
- RL – Right Leg
Bipolar Limb Leads

• Two electrodes
• Positive and negative
• Positive “looks toward negative”
• Einthoven’s Triangle
Unipolar Limb Leads

- Augmented by signal averaged CT
- aVR - right arm positive
- aVL - left arm positive
- aVF - left leg positive
Precordial Leads

- Unipolar
- V1–V6
- Placement is based on anatomical landmark
Precordial Leads
Hexaxial System

- Traditional method
- 6 limb leads at various angles
- Somewhat tedious and difficult to master
Using the 12-Lead

- Skin prep is important
- Dry wet skin
- Shave or clip chest hair
- Gently abrade dead skin
Poor Signal Quality?

• Proper skin preparation
• Minimize patient movement
• Move limb leads proximally
• Override the ECG to force print
• Hold the patient’s arms
Standard 3- or 4-Lead Monitor

- Can be used for “modified chest leads”
- Offers advantages for lead II monitoring
- Acquires a multi-lead ECG
Getting the Multi-Lead ECG

- Run Leads I, II, and III using lead select
- Leave in Lead III on the lead select
- Move the red (LL) electrode to the V1 position
- This is Lead MCL-1
- Move to each position (V2–V6) in succession
Multi-Lead ECG (9-Lead)
Time to Play!

- Practice hooking up and running 12-leads on each other
- Practice finding the landmarks
- Run at least one 12-lead every class day
- You should be able to get one in less than 2 minutes